



SCREENING AND ISOLATION OF POTENTIAL ANTIBACTERIAL COMPOUNDS FROM DRIED LEAVES OF ACONOGONUM TORTUOSUM

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ABSTRACT

Medicinal plants are of great importance to the health of individuals and communities. The most important of these bioactive constituents of plants are alkaloids, tannins, flavonoid and phenolic compounds. Polygonaceae are well defined and have long been universally recognized. Brandbyge followed earlier systems of plant classification in dividing polygonaceae in two sub-families that are Eriogonoideae and polygonoideae. Most polygonaceae are perennial herbaceous plant with swollen nodes trees, shrubs and Vines are also present. Extractions of plant parts for phytochemicals are carried out by Predrag et al (2005) with slight modification.

KEYWORDS: Bioactive compounds, Polygonaceae, Phytochemicals

INTRODUCTION

Medicinal plants are of great importance to the health of individuals and communities. The medicinal value of these plants lies in some chemical substances that produce a definite physiological action on the human body. The most important of these bioactive constituents of plants are alkaloids, tannins, flavonoids, and phenolic compounds. Many of these indigenous medicinal plants are used as spices and food plants. They are also sometimes added to foods meant for pregnant and nursing mothers for medicinal purposes. Many of the drugs isolated and characterized from plants and expensively used in modern medicine have folklore origin and are traditionally employed in systems of medicine curing many ailments^[1-3]. The world Health Organization estimates that approximately 80% of the world's population relies primarily on traditional medicines as sources for their primary health care^[4]. Over 100 chemical substances that are considered to be important drugs that are either currently in use or have been widely used in one or more countries in the world have been derived from a little under 100 different plants. Natural products have been the source of most of the active ingredients of medicines^[5]. Indeed, if one look at new drugs from an indication perspective over the same period of time, over 60% of antibacterial either natural products themselves or based on structures of natural products. Polygonaceae are very well-defined and have long been universally recognized. In the APG. III system, the family is placed in the order Caryophyllales. Within the order, it lies outside of the large clade known as the core Caryophyllales. It is sister to the family Plumbaginaceae, which it does not resemble. The last comprehensive revision of the family was published in 1993 by John Brandbyge as part of the *Families and Genera of Vascular Plants*. Brandbyge followed earlier systems of plant classification in dividing Polygonaceae into two subfamilies, Eriogonoideae and Polygonoideae. Since 1993, the circumscriptions of these two subfamilies have been changed in light of phylogenetic studies of DNA sequences. Genera related to *Coccoloba* and *Triplaris* were moved from Polygonoideae to Eriogonoideae.

Most Polygonaceae are perennial herbaceous plants with swollen nodes, but trees, shrubs and vines are also present. The leaves of Polygonaceae are simply, and arranged alternately on the stems. Each leaf has a peculiar pair of fused, sheathing stipules known as an ochrea. Those species that do not have the nodal ochrea can be identified by their possession of involucre flower heads. The flowers are normally bisexual, small, and actinomorphic, with a perianth of three to six sepals.

After flowering, the sepals often become thickened and enlarged around the developing fruit. Flowers lack a corolla and in some, the sepals are petal-like and colorful. The androecium is composed of three to eight stamens that are normally free or united at the base. The ovary consists of three united carpels that from a single locule, which produces only one ovule. The ovary is superior with basal or free central placentation. The Gynoecium terminates in 1 to 3 styles, each of which ends in a single stigma.

MATERIALS AND METHODS

Plant Materials

The experimental leaves of *Aconogonum tortuosum* will be collected, cleaned, and shade dried in for 15 days and milled into powder using pulverizer^[6]. The powder will be store under dry condition before analysis.



Micro Organisms

The test organisms include both gram negative and gram positive bacteria. The organisms include staphylococcus aureus, Pseudomonas aeruginosa, *Corneybacterium diphtheria*, salmonella typhi, and E. coli.

Preparation of Extract and Phytochemical studies

Extraction of plant tissues was carried out as described by Predrag et al. (2005) with slight modification. The freshly collect fresh mature leaves were chopped into estimate size and state pieces and shade dried for 5 day at room temperature (30-35° C) to constant weight. Fifty grams of each of the plant parts were coarsely powdered using a mortar and pestle and were further reduced to powder using an electric blender. The powdered fractions were transferred into separate closed containers. Twenty-five grams of powdered air dried plant material was extracted with either 100 ml of ether, ethanol and chloroform in a conical flask, with shaking at 120 rpm for 30 min, followed by storage for 24 h in the fridge^[7]. Extraction, purification and identification of desired bioactive compound using chromatographic procedures (TLC, HPLC), and for structural examination spectroscopy techniques (FTIR, UV, NMR) will be done.

RESULTS AND DISCUSSION

Plant substances continue to serve as viable source for the world population and several plants-based drugs are in extensive clinical use. For the past few decades, a number of plants have been widely used for the treatment of various diseases due to their antioxidant properties. Herbal medicines used in the traditional folk medicine provide an interesting and still largely unexplored source for the creation and development of potentially new drugs. But it is necessary to reveal the active principles by isolation and characterization of their constituents and to validate their possible toxicity. As part of this research work aimed at the isolation, characterization, and pharmacological evaluation of bioactive plant secondary metabolites, we will undertake the Phytochemical screening including chromatography technique, UV, FT-IR, NMR spectral analysis of its fraction from methanol, chloroform, ether extract. Phytochemical screening of solvent extract will reveal the presence of various chemical and bioactive compounds.

SUMMARY AND CONCLUSION

With respect to numerous uses of this plant in folk medicine and great experiments that have been accomplished to investigate its biological properties, we decided to study the chemical and bioactive composition of the plant crude extract. The antibacterial activity of the plant *Aconogonum tortuosum* can be attributed to the presence of phytochemical constituents (Flavonoids, phenolic and saponin compounds) present in the respective crude extract. Further work on types of phytoconstituents and purification of individual groups of bioactive compounds may reveal the extract potential of the compounds to inhibit several bacterial species and encourage the development a novel broad spectrum herbal antibacterial formulation in the future.

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